A REVIEW OF THE DEPARTMENT OF DEFENSE DECEMBER 31, 1982 SELECTED ACQUISITION REPORTS (SARs)

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NOTES

Unless otherwise indicated, all years referred to in this report are fiscal years, and all dollar amounts are in current dollars.

Details in the text and tables of this report may not add to totals because of rounding.

PREFACE

This study presents the results of a Congressional Budget Office (CBO) review of the Department of Defense's Selected Acquisition Reports (SAR) dated December 31, 1982. It provides in a few pages facts and data culled from about 900 pages of SAR information. The study is designed to be used by Congressional staff members working in the area of the acquisition of defense weapons systems. It looks at total cost changes in all SAR programs for the fourth quarter of 1982, for the 1982 calendar year as a whole, and over the years since 1977.

This study was requested by the House and Senate Committees on Appropriations and Armed Services. In accordance with CBO's mandate to provide objective and impartial analysis, the paper makes no recommendations. William Myers, Patrick Haar, Jonathan Tyson, and Edward Swoboda of CBO's Budget Analysis Division prepared the paper under the general supervision of James Blum and C.G. Nuckols. Robert L. Faherty and Francis Pierce edited the manuscript. Suzanne Fominaya typed the several drafts.

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Director

August 1983

CONTENTS

TABLES

TABLES (Continued)

APPENDIX TABLES

FIGURE

23-450 O - 83 - 2

SUMMARY

The Selected Acquisition Reports (SARs) are quarterly status reports from the Department of Defense (DoD) to the Congress on major defense acquisition programs. They provide one of the most comprehensive and consistent sources of data on defense weapons systems costs. The reports are submitted in two stages--an advance or preliminary copy, and a final version provided within 15 days after the advance submission. The SARs present each system program manager's current "best estimate" of key performance, schedule, and cost goals for the total program. For fiscal year 1984, the 62 systems included in the SARs account for 42 percent of the Administration's overall defense procurement request of $94.1 billion.

The December 1982 SARs were submitted to the Congress on March 17, 1983. Data in the December 1982 SARs correspond to the President's budget proposal for fiscal year 1984, released on January 31, 1983. Working from that budget, the December SARs extend the cost estimates for each program to the end of the program as it is planned at the present time. This extension of costs provides a more complete picture of the Administration's defense plans for these systems than the annual budget.

This study of the December 1982 SARs has three major purposes:

- To examine the magnitude of overall cost changes reported by the SARs;
- To present data for individual systems that demonstrate the effect of recent cost growth on unit costs, measure the reported costs of program stretchouts and the potential savings achievable from efficient production rates, and indicate potential future cost growth;
- To evaluate the completeness and accuracy of the cost data presented in the SARs.

ANALYSIS OF OVERALL COST CHANGES IN SAR PROGRAMS

The Congressional Budget Office (CBO) made an analysis of cost changes reported by the Defense Department for the fourth quarter of 1982, for the 1982 calendar year as a whole, and over the years from 1977 to 1982. Because of serious limitations in the data, the study can provide only a rough indication of changes in total defense acquisition costs.

Analysis of Cost Changes During the Fourth Quarter of 1982

The DoD reported a significant decrease in weapons systems costs in the fourth quarter of 1982, and attributed at least part of the decrease to its efforts and initiatives to reduce cost growth. CBO was unable to reach definitive conclusions concerning the success of the Department's efforts. In particular, the accounting treatment of the Trident submarine, Fighting Vehicle System, F-15/F-16 Derivative Aircraft, and other programs in the December SARs presents a misleading picture of cost changes. When the reported figures are adjusted to provide more consistency, a somewhat different picture emerges from that presented by the Department in its overview analysis. Whereas the DoD reported a net decrease of $18.4 billion in the costs of the weapons systems that had been included in the September 1982 SARs, CBO's analysis showed a net increase of $2.4 billion for those systems. Nevertheless, this is the smallest cost increase reported for a fourth quarter since 1973.

The largest of the CBO adjustments involves the Trident submarine (see Summary Table 1). In the September SARs (and previously), the Trident submarine program had been the subject of one SAR. For the December SARs, the DoD divided the Trident submarine into two programs--Trident I and Trident II--although the only change is the installation of Trident II missiles beginning with the ninth submarine rather than the thirteenth. In calculating the cost changes that occurred during the fourth quarter,

SUMMARY TABLE 1. ADJUSTMENTS BY CBO TO DOD-REPORTED COST CHANGES IN SAR PROGRAMS IN 1982 FOURTH QUARTER (In billions of dollars).

Adjustments	Amount
DoD-Reported Cost Change	-18.4
CBO Adjustments	
Trident submarine	14.1
F-15 and F-16 derivative aircraft	5.6
Net Other	1.1
Net Adjustments	20.8
CBO-Calculated Cost Change	2.4

however, the DoD included only the Trident I program. This had the effect of understating the fourth-quarter costs for those programs that had been included in the September SARs by $14.1 billion.

A second CBO adjustment involves DoD plans to procure an aircraft derivative of either the F-15 or F-16. The September SARs included $5.6 billion for the cost of these derivative aircraft, whereas the December SARs do not. It appears, however, that the DoD still intends to develop a derivative fighter aircraft, although final decisions about the specific model have not yet been made. Thus, CBO believes it would be more accurate to continue to include the $5.6 billion.

Similar accounting problems for other SAR programs led CBO to add another $1.1 billion to the Department's cost-change calculation for the fourth quarter.

CBO's adjustments do not include two other possible corrections that would have the effect of adding another $17.8 billion to the cost-change calculation for the fourth quarter. These relate to the air launched cruise missile (ALCM) and the F-15/F-16 aircraft. The ALCM program was terminated, for a cost reduction of $4.2 billion. This program was replaced by a new, radar-invisible ALCM program, but the cost of the new program was not included in the December SARs because of its highly classified nature. Similarly, the December SARs do not include $13.6 billion identified in DoD's five-year defense plan (FYDP) for the procurement of additional F-15 and F-16 aircraft. The exclusion of these funds from the December SARs appears to be inconsistent with the Department's normal reporting procedures. Both of these examples reflect the problems inherent in using SAR data for cost-change analysis.

Analysis of Annual Cost Changes

To provide a framework in which to gauge recent cost changes and to appraise the impact of DoD management initiatives, CBO calculated annual cost changes since December 1977. This involved further adjustments to the data to take account of changes in costs that are beyond the control of DoD program managers. Among those are changes in the economic (inflation) assumptions used in the cost estimates, and changes in the quantities of each system actually purchased. (This is not intended to imply that all other cost changes are within the control of program managers.)

CBO also adjusted the data so that for each pair of consecutive years the same set of weapons systems would be compared. It found that changes in program cost alone--excluding changes in inflation assumptions--were sharply lower in 1982 than in 1980 and 1981. This result holds even when

quantities purchased differed from what had been planned a year earlier, and regardless of whether measurements were in current-year dollars or program base-year dollars (see Summary Table 2). This analysis lends some support to the Department's claim of success in its cost-growth reduction efforts. The results are not conclusive, however, because of serious limitations in the data.

The SAR data cover less than half of the Administration's 1984 defense procurement request. Furthermore, the December 1982 SARs cover only 62 of the 122 weapons systems that meet the current criteria for the

SUMMARY TABLE 2. ANNUAL RATES OF PROGRAM COST CHANGES FOR MAJOR WEAPONS SYSTEMS SINCE DECEMBER 1977 (In percent)

	1978	1979	1980	1981	1982
Current-Year Dollars					
Total Program Cost Change a/	7.2	6.4	18.3	36.3	3.5
Program Cost Change Excluding Quantity Change b/	3.9	5.4	14.0	12.6	3.9
Base-Year Dollars c/					
Total Program Cost Change a/	4.2	4.1	10.1	21.0	1.8
Program Cost Change Excluding Quantity Change b/	2.3	3.4	7.6	7.7	2.5

SOURCE: Compiled by CBO from December SARs, with adjustments to 1982 data as described in Appendix A.

a/ Excludes economic change--that is, changes in the inflation assumptions used in the cost estimates.

b/ Excludes changes in cost resulting from change in quantities procured.

c/ The base year varies by program, but generally reflects the year in which a development or production estimate is approved by the Department.

inclusion in the Department's reports to the Congress. Another limitation in SAR data is that cost changes reported each year may not give an accurate representation of program cost growth, as shown by the treatment of the Trident submarine and the ALCM missile in the December 1982 SARs. In addition, there are numerous indications that the latest SAR cost data may not reflect ultimate acquisition costs.

ANALYSIS OF COST GROWTH IN INDIVIDUAL SYSTEMS

CBO's analysis of cost growth in individual systems in the last quarter of 1982 revealed continuing problems. The Nunn-McCurdy Amendment to the 1983 Defense Authorization Act (Public Law 97-252) requires that the Congress be notified when either total program acquisition unit costs or 1983 procurement unit costs are more than 15 percent higher than the baseline for a particular program (see Summary Table 3). In the December 1982 SARs, 11 systems showed unit-cost increases exceeding 15 percent, 4 in both unit-cost categories. Two of these systems, the Patriot missile and the Trident submarine, experienced large unit-cost increases, but the provisions of the Nunn-McCurdy Amendment did not require DoD to report them. Ten systems exceeded one of the unit-cost thresholds by more than 25 percent. Reasons for the increases included program stretchouts, quantity reductions, management problems, and engineering changes.

Effects of Production Rates on Costs

CBO's analysis shows that program stretchouts increased costs for 20 SAR systems by about $5.6 billion or 3 percent in the fourth quarter of 1982. Conversely, higher production rates resulted in savings of $0.8 billion for eight systems. Stretchouts increase costs because production levels become less economic, or because the shift of production from earlier years to later years increases the exposure to inflation.

Indications of Future Cost Growth

CBO also found indications that costs for some systems wll continue to grow. Nineteen SAR systems were behind their planned delivery schedules, eight of them for at least the fourth consecutive SAR reporting period. Fourteen others reported delays in completing key program milestones.

Contract cost performance continues to be a problem. Thirty-six systems, or more than half of the SAR systems, reported expected contract overruns totaling about $4 billion. Ten of the 36 systems also reported expected contract underruns totaling $200 million. The net result, according to DoD estimates, would be an overrun of $3.8 billion. While these

SUMMARY TABLE 3. BREACHES OF NUNN-McCURDY AMENDMENT THRESHOLDS (In percent)

System	1983 Procurement Unit Cost Above Baseline	Total Program Acquisition Unit Cost Above Baseline
Army		
Copperhead Projectile	133.7	117.0
Patriot Missile	25.8 a/	--
Navy		
LAMPS MK III Helicopter (SH-60B)	17.5	28.8
HARM Missile	--	19.9
Tomahawk Missile	75.3	--
Trident Submarines	25.7 b/	15.4 b/
Air Force		
Sparrow Missile	--	27.6
Maverick Missile	100.5	22.0
HARM Missile	--	31.5
ALCM Missile	--	51.5
GLCM Missile	25.6 c/	--

SOURCE: Compiled by CBO from data provided by the Department of Defense.

a/ Unit-cost increase based on the number of missiles procured as compared with the number of firing units procurred.

b/ Unit-cost increase based on the total costs for the Trident I and Trident II submarines.

c/ Large unit-cost increase based on the estimate in the Congressional Data Sheet, which differs from the estimate in the December SARs.

amounts are relatively small in comparison to the total cost of the 36 systems, they may foreshadow major cost growth in future production contracts.

COMPLETENESS AND ACCURACY OF THE SARS

The SARs are very useful for monitoring cost changes and other developments in weapons acquisition programs and for providing rough indicators of overall cost growth. In several respects, however, the SARs continue to contain incomplete, inaccurate, and conflicting information.

Inconsistent Adjustments for Inflation

DoD recently revised downward the indexes it uses for estimating the effects of future inflation on the costs of major procurement programs. The result was to reduce SAR cost estimates across the board by $13 billion. However, there are indications that DoD continues to have problems in making such adjustments.

In 1982, the services did not all use the same inflation rate in estimating the procurement costs of aircraft and missiles. The Army and Navy used the Office of Management and Budget's rate of 14.3 percent, while the Air Force used a rate of 9.6 percent. These differences mean that cost estimates for future years will diverge because of the compounding effect of inflation. Moreover, since different rates were used for jointly procured systems, some programs are either overfunded or underfunded.

At least $1.7 billion in net adjustments were made in the cost estimates for 13 systems to "offset the new economic indices." CBO believes that this was done because otherwise the program costs given in the SARs would have differed from the corresponding costs shown in the President's budget. These adjustments could be eliminated without damage to the 15 systems affected.

Exclusion of Costs from Individual SAR Estimates

The cost estimates for 13 systems excluded at least $40.8 billion in program costs that were footnoted in the SARs or reported in other defense budget documents such as the Congressional Data Sheets. CBO believes that these costs should be included in the SAR estimates. Doing so would raise the December 1982 estimated costs for the 13 systems by 13.8 percent.

23-450 O - 83 - 3

Inconsistent Delivery Data

Equipment deliveries reported in the SARs do not always agree with information in the Congressional Data Sheets. Both sources are supposed to reflect the President's budget as of January 1983. Discrepancies were found for 13 of the 62 systems in the December SARs. In addition, delivery plans for 15 systems reported in the September and December SARs were inconsistent.

Lack of SARs for Many Major Weapons Systems

The Department of Defense Authorization Act of 1983 (Public Law 97-252) requires that more systems be included in the SARs. The reporting requirement was effective January 1, 1983, and included the December 1982 SARs. A SAR requirement now exists for 60 systems in addition to the 62 reported in December 1982. Among the new programs are the MX missile ($22.7 billion), the P-3C aircraft ($9.2 billion), the KC-10 aircraft ($5.2 billion), and AH-1S helicopter ($1.2 billion). The total cost of all the new systems is not known at this time.

CHAPTER I. ANALYSIS OF COST CHANGES IN SAR PROGRAMS

Significant increases in budget authority and outlays for defense investment programs in the President's budgets since 1982 have brought increasing Congressional concern about cost overruns in the acquisition of weapons systems. One of the most comprehensive sources of data on the costs of major weapons programs is the Selected Acquisition Reports (SARs) that the Department of Defense submits quarterly to the Congress.

In the December 1982 SARs, the Department of Defense (DoD) reported a significant decrease in weapons systems costs, and attributed at least part of the results to its management efforts and acquisitions improvement initiatives designed to reduce cost growth. The Congressional Budget Office's analysis of the December 1982 SARs indicates that a more accurate representation of cost change in the fourth quarter would be a small net increase instead of an $18.4 billion decrease. Nevertheless, cost growth in SAR weapons systems was lower in 1982 than in recent years, suggesting that the Department's efforts to curtail cost growth may have borne fruit. Limitations in the SAR data prevent any definitive conclusions, however.

SELECTED ACQUISITION REPORTS

Selected Acquisition Reports were developed originally to provide Defense Department officials with various kinds of cost and management information on major weapons systems. They are now also submitted to the Congress to permit the Armed Services Committees to monitor the Department's progress in meeting its procurement plans, and to provide an early warning of emerging cost problems.

The SARs are a compilation of status reports from the program managers responsible for major defense acquisition programs. They provide each program manager's latest estimates of progress in achieving key goals with respect to performance, schedule, and cost. The SARs are prepared quarterly, but the most comprehensive are those for the fourth quarter (as of December 31). The cost data included in the December SARs are expected to correspond to data included in the President's annual budget submitted to the Congress in January. The fourth-quarter SARs are usually submitted to the Congress in March.

The Department of Defense Authorization Act of 1983 (Public Law 97-252) requires the Department to submit SARs on acquisition programs that

have been designated by the Secretary of Defense as major systems or are estimated to cost more than $200 million for research, development, testing, and evaluation, or more than $1 billion for procurement. These thresholds are to be calculated in fiscal year 1980 constant dollars. Highly classified programs are excluded. This reporting requirement was effective on January 1, 1983, and included the December 1982 SARs.

The Department of Defense has identified 129 systems that meet these reporting criteria. The December 1982 SARs included reports on 62 of these systems, including 15 for which data were reported to the Congress for the first time. These 62 systems account for 42 percent of the Administration's 1984 defense procurement proposals. According to DoD, reports for 12 more systems will be initiated as soon as administratively possible. The Department requested waivers for reports on the remaining 55 systems, but the Armed Services Committees granted waivers for only 7. Thus, the SARs potentially will be expanded to cover more than 120 different weapons acquisition programs in the future.

Cost data for the systems covered by the SARs include total program acquisition costs updated to reflect actual cost on delivered systems, as well as anticipated costs for future procurement that may extend well into the 1990s. Total program cost estimates are provided both in current dollars, including allowance for anticipated inflation, and program base-year dollars. The base year varies by program, but generally reflects the year in which a development or production estimate is approved by the Department.

Changes in cost estimates are reported for the current quarter and for the whole period from the base year to date. The changes are calculated in terms of **economic changes** and **program changes.** Economic changes include changes in the current estimate of total program costs resulting from actual inflation different from that previously assumed and from revisions to assumptions regarding future inflation. Program changes include the following categories:

- Quantity change--a change in the quantity of weapons to be procured.
- Schedule change--a change in a procurement or delivery schedule, completion date, or intermediate milestone for development or production.
- Engineering change--a change in the physical or functional characteristics of the system.
- Estimating change--a change in total program cost due to a correction of error in preparing the original estimate, refinement

of a previous current estimate, or a change in program or cost-estimating assumptions and techniques not provided for in the other cost-change categories.

- Support change--any cost change associated with training and training equipment, peculiar support equipment, activation of an operational site, and initial spares and repair parts.

- Other--a change in program cost for reasons not provided for in other cost variance categories.

The relative importance of the economic and program-change categories is shown in Table 1 for both the fourth quarter of 1982 and from each program's base year to date, as reported by DoD. Quantity changes account for nearly 40 percent of the total cost change from base year to date reported in the December SARs. Most of these changes occurred a year ago with the Administration's decision to acquire additional units of tactical

TABLE 1. DISTRIBUTION OF NET COST CHANGES BY CATEGORY OF CHANGE (In billions of dollars)

Category of Change	Fourth Quarter 1982	Program Base Year to End of 1982
Economic Change	-13.0	39.6
Program Change		
Quantity change	-12.8	103.7
Schedule change	3.9	26.1
Engineering change	3.8	29.0
Estimating change	-2.6	34.3
Support change	2.4	32.9
Other	-a/	2.2
Subtotal	-5.3	228.1
Total Cost Change	-18.4	267.7

SOURCE: Department of Defense.

a/ Less than $50 million.

aircraft, ships, and missiles. 1/ The next largest category of changes from base year to date is economic change, which accounts for 15 percent of total cost changes. The remaining 46 percent of total cost change reported to date is distributed fairly evenly among the schedule, engineering, estimating, and support change categories.

The remainder of this chapter provides a more detailed analysis of the cost changes reported by the Defense Department for the fourth quarter of 1982, for the 1982 calendar year as a whole, and for year-to-year changes since 1977. The analysis will attempt to provide a consistent set of data for measuring cost change that excludes the effect of adding to or subtracting from the number of major weapons systems included in the SARs. Since the SARs do not cover all weapons systems, however, this analysis will provide only rough indications of changes in total defense acquisition costs. Furthermore, as discussed in Chapter III, the cost data reported in the SARs are not necessarily complete for the systems included, nor calculated in a consistent manner. Also, the December 1982 SARs included a number of reported cost changes that CBO regards as misleading in examining estimated cost change over time.

ANALYSIS OF COST CHANGES DURING THE 1982 FOURTH QUARTER

The Department of Defense, in its overview statement on the December SARs, reported that total estimated costs had decreased by $18.4 billion since the report of September 30, 1982--the first decrease in cost in the fourth quarter since 1973. DoD attributed these favorable results to: a lower defense commodity inflation index, a reduction in the number of Trident I submarines to be procured, and continued management efforts to reduce cost growth in weapons procurement. 2/

The reported cost changes for the fourth quarter generally apply only to the weapons systems covered by the September SARs. As shown in Table 1, the lower inflation assumptions used by the Department account for $13.0 billion of the reported $18.4 billion reduction in total costs for the systems covered by the September SARs. The changes in inflation assumptions are shown in Table 2.

1/ See Congressional Budget Office, A Review of the Department of Defense December 31, 1981, Selected Acquisition Report (SAR) (May 1982).

2/ For further details, see Office of Assistant Secretary of Defense (Public Affairs), "Selected Acquisition Reports Show First Year End Decrease in Costs in Ten Years," News Release No. 121-83, March 2, 1983.

TABLE 2. CHANGES IN ADMINISTRATION PROJECTIONS OF FUTURE INFLATION RATES FOR PROCUREMENT OF MAJOR SYSTEMS (By fiscal year, in percent)

Budget Date	1984	1985	1986	1987	1988
February 1982	7.3	7.5	6.5	6.5	6.5
January 1983	6.9	6.4	6.1	5.8	5.8

SOURCE: Compiled by CBO from data provided by DoD.

Quantity changes made in the 47 systems covered by the September SARs account for another $12.8 billion in lower total costs reported by DoD. These changes include a $10.9 billion decrease for a reduction of seven Trident I submarines. But, as noted by the Department, these submarines will be procured as SSBN734 Class Trident II submarines and therefore no real decrease in quantity has occurred. (The "new" Trident II submarines were included in the 15 new weapons systems covered by the December SARs.)

Excluding the reductions attributed to economic and quantity changes leaves an increase of $7.5 billion (1.3 percent) due primarily to engineering, schedule, and support changes. The Department states that this increase is the smallest total dollar increase since December 1975 and the lowest percentage increase since 1973.

CBO Analysis

CBO believes that the Department's treatment of the program costs for the Trident submarines is misleading, since the Tridents continue to have the same program manager and the same contractual arrangements. All Trident submarines were originally designed to carry the larger Trident II missile, although modifications will allow the first eight to be initially armed with the smaller Trident I missile. CBO believes that it is more appropriate to include the estimated costs of the Trident II submarines as part of the September base for measuring cost changes during the fourth quarter. This has the effect of adding $14.1 billion to the reported cost change for the fourth quarter, and showing a $3.2 billion (15.4 percent) increase in the estimated total costs for the 15 Trident submarines.

A less obvious accounting change involves DoD plans to procure an aircraft derivative of either the F-15 or F-16. The September SARs included a total of $5.6 billion for both of these derivative aircraft, but the December SARs do not. CBO understands that DoD still intends to develop a derivative fighter aircraft and has included funds for this purpose in its budget plans. 3/ DoD has indicated that the previous SARs incorrectly reported the costs of procuring two types of derivative aircraft, and has removed funds for this purpose from the December SARs because only one version will be acquired and a final decision has not yet been made. This accounting treatment shows a $5.6 billion decrease in estimated program costs for derivative aircraft. CBO believes a more correct accounting for cost variance would be to show no change at this time.

The December SARs include a similar change for Fighting Vehicle ammunition. According to the Army, a reduction of $679 million was included in the Fighting Vehicle System (FVS) December SAR to remove the estimated cost of procuring its ammunition. This cost change was included because the Army has decided to use the same ammunition for its Light Armored Vehicle. DoD's procedure in preparing SARs is to include the cost of ammunition only when it is specific to a single weapons system. Since the Army is still procuring the ammunition for the FVS, however, the exclusion of these costs from the December SARs gives a misleading picture of cost change.

DoD also included four weapons systems in the December SARs that were not included in the September SARs. These four systems are the Stinger missile, the AN/TCC-39 switching system, the CH-53E helicopter, and the Air Force version of the AMRAAM missile. Their cost changes--which amounted to a net decrease of $829 million--were included in the December SARs because DoD had received SARs on these systems in the past. However, SARs for these programs had not been submitted previously to the Congress. Therefore, from the Congressional viewpoint of measuring cost changes for the weapons systems included in the September SARs, these cost changes should be excluded.

To give a more accurate accounting of cost change in the fourth quarter, CBO believes two additional adjustments should be made. First, $167 million of estimated software and replenishment spares costs for the Patriot missile were removed from the December SARs as inappropriate to

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3/ DoD budget documentation (RDT&E Descriptive Summary) indicates that the total estimated cost for the derivative fighter budget program element is $5.6 billion.

TABLE 3. ADJUSTMENTS BY CBO TO DOD-REPORTED COST CHANGES IN SAR PROGRAMS IN 1982 FOURTH QUARTER (In billions of dollars)

Adjustment	Amount
DoD-Reported Cost Change	-18.4
CBO Adjustments	
Trident submarine	14.1
F-15 and F-16 derivative aircraft	5.6
Fighting Vehicle ammunition	0.7
New system cost changes	0.8
Patriot missile	0.2
Military construction costs	-0.5
Net adjustments	20.8
CBO-Calculated Cost Change	2.4

the SAR reporting guidelines. These costs will still be incurred, however, and are included in the Department's budget plans. Second, the December SARs include $543 million for military construction costs that were not included in previous Army SARs. These estimated costs are not new; they were added to the December SARs to give a more complete estimate of total program costs. CBO believes, however, that they should not be included in a "cost change" calculation.

Adjusting the reported figures for these factors gives a somewhat different impression of cost change for the fourth quarter than presented by DoD in its overview analysis (see Table 3). Instead of a net decrease of $18.4 billion in the costs of the weapons systems included in the September SARs, there is a net increase of $2.4 billion. This is still the smallest cost increase reported in the December quarter since 1973. Further detail on these adjustments is provided in Appendix A.

The CBO adjustments shown in Table 3 do not include two other possible adjustments that would have the effect of adding another $17.8 billion to the cost change calculation for the December SARs. These possible adjustments are for the Air Launched Cruise Missile and the F-15/F-16 aircraft.

23-450 O - 83 - 4

The December 1982 SARs showed a $4.2 billion decrease in the cost of the Air Force's Air Launched Cruise Missile (ALCM). This is the result of terminating the program in favor of a new missile with stealth radar-evading technology, for which a prime contractor already has been selected. The cost of the new missile program, however, was not included in the December SARs because of its highly classified nature. While this exclusion from the December SARs is consistent with the Department's reporting procedures, it reveals a serious limitation in the use of SAR data to analyze cost changes in major weapons systems.

Similarly, the December SARs do not include $13.6 billion added to the Department's five-year defense plan (FYDP) for the procurement of additional F-15 and F-16 aircraft. The Department considers these added costs as only planning options, which have not yet been made part of the approved F-15/F-16 acquisition programs. Because the added funds were included in the FYDP supporting the President's 1984 budget, their exclusion from the December SARs appears to be inconsistent with the Department's reporting procedures.

ANALYSIS OF COST CHANGES DURING 1982

The December SARs typically include the most changes of all the quarterly SARs. Many of the reported cost changes reflect decisions to increase or decrease the quantity of weapons to be procured, consistent with the Administration's defense plans as outlined in the President's annual budget and the Department's five-year defense plan. The December SARs may also include revised inflation assumptions for calculating future acquisition costs, in order to be consistent with the economic assumptions underlying the President's annual budget. The Department's reporting guidelines also require the December SARs to be a comprehensive annual report, and to include a lot more data on the technical and operational characteristics, schedule milestones, and program acquisition costs than the other quarterly SARs. 4/

Given the comprehensive nature of the December SARs, CBO believes it would be useful for these reports to include calculations of the cost changes during the calendar year as well as during the October-December quarter. This would provide a more complete picture of changes in

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4/ For further details on DoD reporting guidelines for SARs, see Department of Defense Instruction, Selected Acquisition Reports, No. 7000.3, March 2, 1983.

estimated costs for major weapons systems, and would summarize cost changes reported for other quarters of the year.

Using the Department's data, with the adjustments to the December SARs discussed in the previous section, Table 4 provides CBO's calculations of cost changes in SAR systems during 1982. These calculations cover 43

TABLE 4. NET COST CHANGES FOR 43 MAJOR WEAPONS SYSTEMS DURING CALENDAR YEAR 1982, BY CATEGORY OF CHANGE

Category of Change	Current-Year Dollars	Base-Year Dollars
	In Billions of Dollars	
Total Estimated Cost, 43 Systems, December 1981	446.7	195.1
Cost Changes During 1982		
Economic change	-9.9	N/A
Quantity change	-1.8	-1.4
Other program change	17.6	4.9
Net change	5.8	3.5
Total Estimated Cost, 43 Systems, December 1982	452.5	198.7
	Percentage Changes	
Total Estimated Cost Change	1.3	1.8
Program-Cost Change Excluding Economic Change	3.5	1.8
Program-Cost Change Excluding Economic and Quantity Changes	3.9	2.5

SOURCE: Compiled by CBO from 1982 SARs, with adjustments as described in Appendix A.

major weapons systems that were included in both the December 1981 and December 1982 SARs. The addition and deletion of weapons systems from the SARs during the year distorts the calculation of cost change for weapons procurement. A clearer picture of cost change is obtained by limiting the analysis to a constant number of SAR systems. 5/

As shown in Table 4, the net change in estimated total costs for the 43 major weapons systems included in the SARs throughout calendar year 1982 was an increase of $5.8 billion (1.3 percent) measured in current-year dollars. The current-year dollar change included a decrease of $9.9 billion for revised inflation assumptions. Excluding this economic change, the program-cost changes totaled $15.7 billion (3.5 percent) in current-year dollars, and $3.5 billion (1.8 percent) in base-year dollars. The quantity changes during 1982 for the 43 weapons systems included in this analysis were quite small. Excluding both economic and quantity changes, the other program-cost changes totaled $17.6 billion (3.9 percent) in current-year dollars and $4.9 billion (2.5 percent) in base-year dollars. These other program-cost changes are primarily for engineering, schedule, and support-cost changes.

Excluding economic and quantity changes from the annual cost-change calculations gives a better indication of what success the Department of Defense is having in its effort to curtail cost growth in weapons acquisition through various management initiatives. These initiatives include budgeting for more likely cost, budgeting for technological risk, and more realistic budgeting for inflation. The Department also has reportedly given higher priority to contract-cost auditing, and has increased attention to cost and cost monitoring through regular senior management review of individual programs.

Not all program-cost changes, excluding quantity changes, can be identified as the responsibility of DoD management. Many factors influencing estimated costs are beyond the control of the program manager. For example, the unexpected development by a potential enemy of the capa-

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5/ During the year, six weapons systems were removed from the quarterly SARs as the planned program acquisitions were completed, terminated, or otherwise changed so as no longer to require inclusion in the SARs. These were the Standoff Target Acquisition System, ROLAND missile, Five-Inch Guided Projectile, NATO PHM guided missile patrol hydrofoil, A-10 aircraft, and E-4 aircraft. Also during the year, 19 major weapons systems were added to the SARs, including 15 in the December SARs as discussed in an earlier section.

bility to jam the guidance system of an air-to-air missile may require an engineering change to counter it. Therefore, program-cost changes, excluding economic and quantity changes, can serve only as a very general indication of the impact of the Department's acquisition improvement initiatives.

ANALYSIS OF ANNUAL COST CHANGES SINCE 1977

In order to gauge the relative magnitude of the 1982 cost changes and the possible impact of the DoD management initiatives, CBO calculated annual cost changes since December 1977. These calculations use the same methodology as for measuring cost change during 1982--that is, each annual cost change represents the change in estimated total costs from December to December for a constant set of weapons systems. Weapons systems added or deleted to the SARs during a year were excluded from the analysis. Table 5 provides some descriptive data about the systems included in the CBO analysis.

An alternative approach would be to measure cost change for only those systems that are covered by SARs for the entire period. This would

TABLE 5. DESCRIPTIVE CHARACTERISTICS OF SYSTEMS INCLUDED IN THE CBO COST-CHANGE ANALYSIS

Characteristic	1978	1979	1980	1981	1982
Number of Systems	47	50	46	46	43
Average Age (Years) a/	6.9	7.0	7.3	7.7	8.3
Total Cost at Period End (Billions of current-year dollars)	208.0	250.6	304.6	407.3	452.5

SOURCE: Compiled by CBO from data included in the December SARs, with adjustments to 1982 data as described in Appendix A.

a/ Measured from the program base.

have the effect, however, of reducing considerably the data base for the analysis. Only 27 weapons systems are covered by SARs for the entire period from December 1977 to December 1982.

The results of CBO's analysis of cost change since 1977 are summarized in Tables 6 and 7. Table 6 shows the annual cost changes in both current-year and base-year dollars. Table 7 shows the program-cost changes (that is, excluding economic change) in terms of percentage change from the estimated system costs at the beginning of each year.

TABLE 6. ANNUAL COST CHANGES FOR SELECTED MAJOR WEAPONS SYSTEMS SINCE DECEMBER 1977 (In billions of dollars)

Category of Change	1978	1979	1980	1981	1982
			Current-Year Dollars		
Economic Change	1.5	16.2	7.9	3.8	-9.9
Quantity Change	6.2	2.0	10.9	70.0	-1.8
Other Program Change	7.6	12.0	35.1	37.4	17.6
Total	15.3	30.2	53.8	111.2	5.8
			Base-Year Dollars		
Quantity Change	2.2	0.9	3.3	18.5	-1.4
Other Program Change	2.5	4.1	9.7	10.6	4.9
Total	4.7	5.0	13.0	29.1	3.5

SOURCE: Compiled by CBO from December SARs with adjustments to 1982 data as described in Appendix A.

As discussed earlier, the economic change category in the current-year dollar figures measures only the change in the latest estimate of total program costs resulting from actual inflation different from that previously assumed and from revisions in assumptions regarding future inflation. The

TABLE 7. ANNUAL RATES OF PROGRAM-COST CHANGES (EXCLUDING ECONOMIC CHANGE) FOR MAJOR WEAPONS SYSTEMS SINCE DECEMBER 1977 (In percent)

	1978	1979	1980	1981	1982
Current-Year Dollars					
Total Program-Cost Change a/	7.2	6.4	18.3	36.3	3.5
Program-Cost Change Excluding Quantity Change	3.9	5.4	14.0	12.6	3.9
Base-Year Dollars					
Total Program-Cost Change a/	4.2	4.1	10.1	21.0	1.8
Program-Cost Change Excluding Quantity Change	2.3	3.4	7.6	7.7	2.5

SOURCE: Compiled by CBO from December SARs, with adjustments to 1982 data as described in Appendix A.

a/ Excludes economic change.

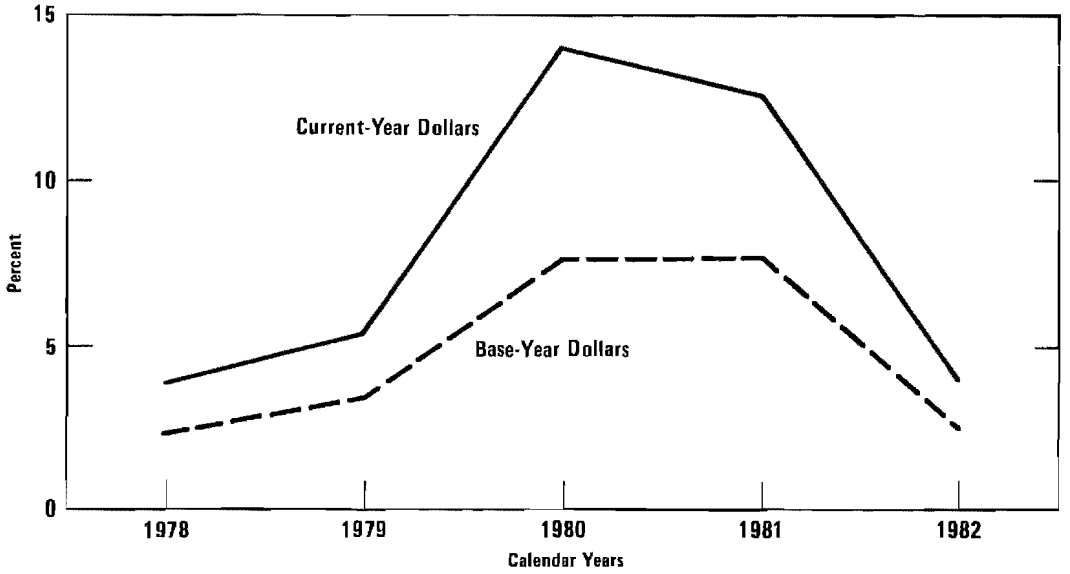
base-year dollar figures remove all of the effects of inflation by measuring change in constant base-year dollars. The base year varies by program, however, so that these data are not a usual constant-dollar series with a common base year.

The results of the CBO analyses show that the program-cost changes (excluding economic change) for SAR systems in 1982 were down sharply relative to changes in 1980 and 1981. This result holds whether quantity changes are included or excluded, and whether the changes are measured in current-year dollars or base-year dollars. The 1982 program-cost change percentages, however, are not very different from those that occurred during 1978, particularly when quantity changes are excluded (see Figure 1).

This analysis lends some support to the Department's claim that the cost changes reported in the December 1982 SARs reflect success in its cost-growth reduction efforts undertaken since 1981. The results are not

Figure 1.

Annual Rates of Program Cost Growth (Excluding Economic and Quantity Changes) for Selected SAR Weapons Systems



conclusive, however, because of serious limitations in the data used for the analysis. The SAR data cover only a limited part of the Department's spending for weapons acquisition. Systems included in the December 1982 SARs account for less than half of the Administration's 1984 defense procurement request. Furthermore, the December 1982 SARs cover only 62 of the 122 weapons systems that meet the current criteria for inclusion in the Department's reports to the Congress.

Another limitation in the SAR data is that the cost changes reported each year may not give an accurate representation of program-cost growth. The treatment of the Trident submarine and of the ALCM missile in the December 1982 SARs is a good example of how reporting procedures can distort the measurement of cost changes. In addition, there are numerous indications that the latest SAR data may not reflect the ultimate acquisition cost. Chapter II shows that several individual weapons systems continue to experience substantial cost growth, that decisions to slow production rates (and increase unit costs as a result) continue to be made, and that recent production-schedule slippage and contract overruns may not be reflected in current cost estimates. Chapter III also discloses that the

Department was not consistent in its application of inflation assumptions for calculating economic change and that certain nonprogrammatic adjustments may have artifically increased the reported costs by $1.7 billion.

Nevertheless, the variety and quantity of data contained in the SARs are very valuable. The SARs are very useful for monitoring cost changes and other developments in weapon acquisition programs, and for providing rough indicators of overall cost growth in procurement programs.

CHAPTER II. CONTINUED COST GROWTH IN INDIVIDUAL SYSTEMS

The first chapter discussed cost growth for all SAR weapons systems taken together. This chapter narrows the focus to individual systems and analyzes cost growth in terms of:

- o Unit costs and the Nunn-McCurdy Amendment;
- o Effects of production schedule changes; and
- o Indications of potential future cost growth.

The analysis shows that some weapons systems are continuing to experience substantial cost growth.

UNIT COSTS AND THE NUNN-McCURDY AMENDMENT

The 1983 Defense Authorization Act (Public Law 97-252) requires that the Congress be notified when either total program acquisition unit costs or 1983 procurement unit costs are more than 15 percent higher than the baseline for a particular program. For the December 1982 SARs, a program's baseline is the cost estimate given in the first SAR submitted to the Congress on that program, or in the December 1981 SAR, whichever is later. If the unit-cost growth exceeds the baseline by 25 percent or more, the Secretary of Defense must certify in writing that the system is required.

In the December 1982 SARs, 11 systems showed unit-cost increases exceeding 15 percent, 4 in both categories of unit costs (see Table 8). Two of these systems, the Patriot missile and the Trident submarine, experienced large unit-cost increases but the provisions of the Nunn-McCurdy Amendment did not require DoD to report them to the Congress. Ten systems exceeded one of the unit-cost thresholds by more than 25 percent.

Causes of Unit-Cost Increases

Unit-cost growth can be traced to a number of causes. Five of the threshold breaches (the LAMPS MK III Helicopter, Navy HARM missile, Tomahawk missile, Maverick missile, and GLCM missile) were caused by such factors as: a stretchout of previously planned deliveries, underestimation of costs because of technical or management problems, and unanticipated inflation. Two other programs (the Air Force Sparrow and

TABLE 8. BREACHES OF NUNN-McCURDY AMENDMENT THRESHOLDS (In percent)

System	1983 Procurement Unit-Cost Above Baseline	Total Program Acquisition Unit-Cost Above Baseline
Army		
Copperhead Projectile	133.7	117.0
Patriot Missile	25.8 a/	--
Navy		
LAMPS MK III Helicopter (SH-60B)	17.5	28.8
HARM Missile	--	19.9
Tomahawk Missile	75.3	--
Trident Submarines	25.7 b/	15.4 b/
Air Force		
Sparrow Missile	--	27.6
Maverick Missile	100.5	22.0
HARM Missile	--	31.5
ALCM Missile	--	51.5
GLCM Missile	25.6 c/	--

SOURCE: Compiled by CBO from data provided by the Department of Defense.

a/ Unit-cost increase based on the number of missiles procured as compared with the number of firing units procured.

b/ Unit-cost increase based on the total costs for the Trident I and Trident II submarines.

c/ Large unit-cost increase based on the estimate in the Congressional Data Sheet, which is different from the estimate in the December SAR.

THE NUNN-McCURDY AMENDMENT

The 1983 Defense Authorization Act (Public Law 97-252) established a three-tiered reporting requirement to identify programs that have significant cost growth. The purpose is to provide a means by which the Congress can become aware of cost growth early enough to take remedial action. The so-called Nunn-McCurdy Amendment requires that the secretaries of the Army, Navy, and Air Force notify the Congress of programs in which: (1) the program acquisition unit cost is more than 15 percent above the baseline; (2) the procurement unit cost for fiscal year 1983 is more than 15 percent above the baseline; or (3) cost or schedule variances of a major contract have resulted in an increase in the cost of the contract of at least 15 percent over the initial cost of the contract. If unit-cost growth exceeds the baseline by 25 percent or more, the Secretary of Defense must certify in writing that the system is required.

The baseline used for these reports is the cost estimate in the first SAR submitted to the Congress on the program, or the estimate in the December SAR for the fiscal year immediately before the current fiscal year, whichever is later. Thus the baseline is updated annually. All costs are measured in current rather than constant dollars. Authority to obligate funds for a program is automatically terminated if the service secretary does not submit a report within 30 days or if the Secretary of Defense fails to certify the system requirement within 60 days of the breach determination. The prohibition on the obligation of funds does not apply if the increase was caused by termination or cancellation of the acquisition program.

HARM missiles) experienced significant quantity reductions as well as unanticipated cost increases. Cost estimates for three systems (Copperhead projectile, Patriot missile, and GLCM missile) breached the thresholds primarily because of significant quantity reductions or planned program terminations. Cost estimates for Trident submarines breached the threshold because the program was changed so that Trident II missiles will be initially installed in the ninth submarine rather than the thirteenth submarine.

Large Cost Increases Not Reported by DoD Under the Nunn-McCurdy Amendment Procedures

Two significant unit-cost increases included in Table 8 were not reported by DoD--those of the Patriot missile and the Trident submarine.

The Patriot missile program includes missiles, launchers, and fire control units. Since the beginning of the program, the DoD has consistently calculated the Patriot procurement unit cost on the basis of the number of firing units being procured. 1/ However, if the average unit cost is computed by comparing total program costs with the number of missiles being procured, the program exceeds the 1983 procurement unit-cost threshold by about 26 percent. The planned missile buy for 1983 was reduced by 89 missiles, but the number of firing units was unchanged from the December 1981 SAR baseline. Because DoD computes unit prices for the program using firing units, the increased unit cost of the missile is not readily apparent.

Last year, there was one SAR for all Trident submarines. The SAR now displays the costs of Trident submarines as if two different submarines were being developed, when in fact all Trident submarines share a common design and differ only in that some will initially be armed with Trident I missiles while others will carry the larger Trident II missile that all are configured to accommodate. When the combined current estimated costs of the submarines are compared with the estimated costs of a year ago, the 1983 procurement unit cost is 25.7 percent above the baseline while the total program acquisition unit cost is 15.4 percent above Trident baseline costs as shown in Table 8.

EFFECTS OF PRODUCTION RATES ON COSTS

When a weapons system is acquired over a period of years, the rate of production per year and the total quantity to be procured will often vary from initial plans. These changes can result from any number of factors, such as material or labor shortages, production line changes, changes in Soviet weaponry, or budget ceilings that result in a reallocation of dollars to fewer systems. Table 9 shows the effect of production schedule changes that occurred between September 30 and December 31, 1982. A total of 28 systems changed their production schedules in that quarter at a net cost of $4.8 billion.

When production rates are stepped up, savings generally occur because utilization of facilities improves and there is less exposure to inflation. For this reason, economic production rates are included among DoD's recent management initiatives. Table 9 indicates that eight SAR systems have raised their planned production rates at a savings of $0.8 billion.

1/ A Patriot fire unit consists of a phased array radar, control unit housing computers and operators, a power plant vehicle, and up to eight track-mounted launchers, each with four missiles.

In contrast, the SARs also provide evidence that the production rates for many programs have been slowed--at a large cost penalty. A program stretchout occurs when (1) the procurement schedule is changed so that weapons system orders are moved from the early years of a program to later years, or (2) a program is extended beyond the period for which it was planned without increasing quantities. Stretchouts increase costs because production levels become less economic, or because the shift of production from earlier years to later years increases the exposure to inflation. Table 9 shows that 20 SAR systems have incurred program stretchouts that have increased costs from those in the September 1982 SARs by about $5.6 billion or 3 percent.

INDICATIONS OF FUTURE COST GROWTH

CBO's analysis of the December SARs found several possible sources of future cost growth. This section discusses schedule performance, contract cost performance, and other indications of potential future cost growth. While each of these factors may result in cost growth, it is not possible to predict the actual result.

Schedule Performance

One measure of schedule performance is the degree to which contractors are meeting the planned delivery schedules. According to the SARs, 43 systems remain on or ahead of planned schedules for delivery of equipment, while 19 are behind (see Table 10). 1/ Chapter III of this report points out, however, that there are substantial differences between the actual deliveries included in the SARs and those in the Congressional Data Sheets. Chapter III also identifies differences between delivery plans contained in the September and December SARs. Of the 19 SAR systems, 8 reported delayed deliveries for at least the fourth consecutive SAR reporting period. Two others have reported delivery delays in three of the last four SARs.

Among the many reasons for delivery problems are technical difficulties, material shortages, and strikes. Although these can entail significant costs, they may also have more critical consequences in delaying force modernization and hindering readiness.

Another measure of schedule performance is the degree to which a system is completing its key program milestones on time--for example, such

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1/ Programs on or ahead of planned schedules for delivery of equipment include those that have not yet begun deliveries of any type.

TABLE 9. COSTS OF PROGRAM STRETCHOUTS AND SAVINGS FROM MORE EFFICIENT PRODUCTION RATES, SEPTEMBER TO DECEMBER 1982 (In millions of dollars)

System	Costs	Savings	Net Change
Army			
Patriot Missile	390.8	--	
Hellfire Missile	4.7	--	
AH-64 Helicopter	44.3	--	
M-1 Tank	646.2	--	
AN/TTC-39 Switching System	45.7	--	
Subtotal	1,131.7	--	1,131.7
Navy			
F-14 Aircraft	492.3	--	
F/A-18 Aircraft	975.1	--	
AV-8B Aircraft	--	168.2	
LAMPS MK III Helicopter	1,238.4	--	
LAMPS MK III Ships	--	8.2	
CH-53E Helicopter	--	56.3	
Captor Torpedo System	--	14.3	
HARM Missile	146.0	--	
Phoenix Missile	64.6	--	
Sidewinder Missile	22.6	--	
Sparrow Missile	27.1	--	
Tomahawk Missile	258.9	--	
TACTAS Sonar	4.1	--	
CG-47 Cruiser	182.2	--	
Subtotal	3,411.3	247.0	3,164.3
Air Force			
F-16 Aircraft	--	329.7	
E-3A Aircraft	134.6	--	
IR Maverick Missile	--	219.5	
NAVSTAR Global Positioning System	1.8	--	
GLCM Missile	3.8	--	
Joint Tactical Information Distribution System	5.8	--	
Sidewinder Missile	--	6.6	
Sparrow Missile	--	37.6	
HARM Missile	926.3		
Subtotal	1,072.3	593.4	478.9
Total	5,615.3	840.4	4,774.9 a/

SOURCE: Compiled by CBO from the December 31, 1982, SARs.

NOTE: Program costs are generally incurred when production schedules are stretched out, leading to less economic production rates and/or more inflation expense per unit produced. By contrast, advancing production schedules usually reduce program costs. Exceptions may occur, as when new tooling is required to support higher production rates.

a/ Excludes a net reduction of $917.1 million for other schedule changes such as terminations, reductions, and the schedule portion of quantity changes.

milestones as completion of testing, a decision to undertake production, or the awarding of contracts. The CBO review of the December SARs revealed that 14 systems had experienced delays in completing some of these milestones. Table 10 provides the number of schedule milestones slipped for each system since the September SARs. The amount of time involved in a slip ranged from 1 to 11 months.

Major milestone delays are important for what they suggest about program execution. If initial flight testing of a missile is delayed three months, this will probably not of itself involve additional costs. But a delay caused by technical, material, or manpower problems may require additional funds to resolve. Milestone delays may also serve as leading indicators of future delivery delays.

Contract Cost Performance

Program office data show contracts that are expected to overrun or underrun their target prices (see Tables 11 and 12). Thirty-six systems, or more than half of the SAR systems, now report expected contract overruns totaling about $4 billion. Ten of the 36 systems also report expected contract underruns totaling about $200 million. One other system reports an underrun totaling $6 million. The net result, according to the DoD estimates, would be an overrun totaling about $3.8 billion. Relative to the total number of contracts and dollars required for SAR programs, these are small amounts. Each of the contracts in Tables 11 and 12 is, however, among the six largest for its respective program; many of them are development and early production contracts. While the dollar amount of the cost growth is generally small, overruns on such contracts could be a warning of potential major cost growth in future production contracts.

TABLE 10. SAR PROGRAMS WITH MILESTONE AND DELIVERY SCHEDULE CHANGES AS OF DECEMBER 31, 1982

System	Number of Schedule Milestones Ahead	Number of Schedule Milestones Behind	System Ahead of or Behind the Delivery Schedule
Army			
Patriot Missile	--	--	Behind a/
Pershing II Missile	--	a/	Behind a/
Stinger Missile	--	--	Behind
CH-47D Helicopter	--	--	Ahead
UH-60 Helicopter	--	--	Ahead
AHIP Helicopter	a/	--	--
Fighting Vehicle System	--	--	Behind c/
M-1 Tank	--	--	Behind
Multiple Launch Rocket System	a/	a/	Behind
Navy			
F-14 Aircraft	--	b/	Behind
F/A-18 Aircraft	--	c/	Behind
AV-8B Aircraft	a/	b/	--
CH-53E Helicopter	--	a/	Ahead
Captor Torpedo System	--	--	Behind a/
HARM Missile	--	b/	--
Harpoon Missile	--	--	Ahead
Phoenix Missile	--	b/	Behind c/
Sidewinder Missile	--	--	-- d/
Sparrow Missile	a/	a/	Behind c/
Tomahawk Missile	--	e/	Behind c/
Trident I Submarine	d/	--	--
Trident I Missile	--	--	Behind
CG-47 Cruiser	a/	--	Ahead
CVN Carrier	d/	--	--
Air Force			
F-15 Aircraft	--	--	Ahead
F-16 Aircraft	--	--	Ahead b/
EF-111A Aircraft	--	b/	--
B-1B Aircraft	c/	--	--
IR Maverick Missile	--	a/	Behind
Defense Satellite Communications System	--	a/	Behind
NAVSTAR Global Positioning System	--	a/	Behind
ALCM Missile	--	--	Ahead
GLCM Missile	--	--	Behind
Sidewinder Missile	--	--	Behind
Sparrow Missile	--	--	Behind

SOURCE: Compiled by CBO from the December 31, 1982, SARs.

a/ The program is further behind schedule than it was in the September SAR.
b/ The program is further ahead of schedule than it was in the September SAR.
c/ The program remains behind despite a revision of the planned delivery schedule.
d/ The program would be behind without a revision of the planned delivery schedule.
e/ Because of a major program restructure, most major milestones were delayed or completion dates were designated as to-be-determined.

TABLE 11. CONTRACTS THAT ARE EXPECTED TO OVERRUN THEIR TARGET PRICE

Program	Number of Contracts	Percent Over Target Prices a/	Total Amount of Overrun (millions of dollars)
Army			
Patriot Missile	2	b/	b/
Pershing II Missile	1	b/	b/
Hellfire Missile	2	b/	b/
Stinger Missile	1	b/	b/
CH-47D Helicopter	1	b/	b/
UH-60 Helicopter	2	1-2	6
AHIP Helicopter	1	b/	b/
Fighting Vehicle System	4	b/	b/
M-1 Tank	1	b/	b/
DIVAD Gun	1	b/	b/
Multiple Launch Rocket System	3	b/	b/
Navy			
F/A-18 Aircraft	3	4-38	643
AV-8B Aircraft	1	2	11
CH-53E Helicopter	3	9-16	39
Sidewinder Missile	1	15	10
HARM Missile	2	3-10	14
Sparrow Missile	1	6	6
Tomahawk Missile	5	1-54	87
Trident I Submarine	3	b/	b/
TACTAS Sonar	2	3-22	7
SSN-688 Submarine	1	181	1,630
CG-47 Cruiser	5	1-4	45
FFG-7 Frigate	1	b/	b/
Battleship Reactivation	1	359	156
Air Force			
F-15 Aircraft	3	2-21	137
F-16 Aircraft	6	1-13	173
EF-111A Aircraft	1	3	4
B-52 OAS/CMI Modifications c/	2	2-7	23
AMRAAM Missile	1	6	22
Defense Satellite Communications System	1	17	22
NAVSTAR Global Positioning System	4	3-10	22
Inertial Upper Stage Rocket	1	23	136
ALCM Missile	2	3-9	20
GLCM Missile	4	6-32	64
IR Maverick Missile	2	13-38	58

SOURCE: Compiled by CBO from the December 31, 1982, SARs.

a/ Percent range is for multiple contracts.

b/ The amount and percent of the overrun are not included in this table because public disclosure of the estimates could jeopardize future contract negotiations.

c/ DoD counts these modifications of the B-52 as two systems.

TABLE 12. CONTRACTS THAT ARE EXPECTED TO UNDERRUN THEIR TARGET PRICE

Program	Number of Contracts	Percent Under Target Prices a/	Total Amount of Underrun (millions of dollars)
Army			
Patriot Missile	2	b/	b/
Stinger Missile	1	b/	b/
CH-47D Helicopter	2	b/	b/
Navy			
F/A-18 Aircraft	1	4	11
CH-53E Helicopter	1	8	14
Sparrow Missile	2	4-11	26
Tomahawk Missile	1	6	7
FFG-7 Frigate	4	b/	b/
Air Force			
E-3A Aircraft	2	1-2	6
ALCM Missile	3	1-6	13
GLCM Missile	2	2-6	8

SOURCE: Compiled by CBO from the December 31, 1982, SARs.

a/ Percent range is for multiple contracts.

b/ The amount and percent of the underrun are not included in this table because public disclosure of the estimates could jeopardize future contract negotiations.

CHAPTER III. COMPLETENESS AND ACCURACY OF THE SARS

This chapter evaluates the accuracy and completeness of the cost and program data as presented in the SARs. The five topics discussed are: inconsistent application of inflation rates, non-programmatic adjustments to cost estimates, exclusion of costs from individual SAR estimates, conflicting weapons delivery plans, and the lack of SARs for many major weapons systems.

INCONSISTENT APPLICATION OF INFLATION RATES

The DoD and the Office of Management and Budget (OMB) have revised downward their economic indexes for inflating the costs of major defense procurement programs--ships, aircraft, missiles, and tracked vehicles--in the 1984 budget. The result has been to reduce SAR cost estimates across the board by $13 billion, as calculated by DoD and discussed in Chapter I. Nevertheless, DoD continues to have problems in accurately portraying the effect of changes in inflation.

Inconsistent Economic Indexes for 1982

The services used different inflation rates in 1982 to estimate the procurement costs of aircraft and missiles. Although not required to, the Army and Navy generally applied the OMB rate of 14.3 percent for major weapons procurement. 1/ In contrast, the Air Force used a lower rate of 9.6 percent. Table 13 shows that 18 of 19 Army and Navy aircraft and missile systems used the 14.3 percent rate in 1982, while 14 of 15 Air Force aircraft and missile systems used 9.6 percent.

The use of different inflation rates for 1982 could significantly affect estimates of future program costs because the differences would be compounded over the years. Moreover, the use of two different rates for identical systems or similar systems made by the same prime contractor suggests that some programs are overfunded or underfunded. Table 14 gives examples of such systems. If one assumes that all the estimates in Table 13 should reflect the same inflation rate and adjusts the 19 Army and Navy estimates downward using the lower rate of 9.6 percent, the savings are

1/ The actual inflation rates were computed by the Department of Commerce and were provided to OMB for distribution to DoD.

TABLE 13. INFLATION RATES USED IN ESTIMATING AIRCRAFT AND MISSILE PROCUREMENT COSTS IN 1982

	Number of Systems	Systems Using 14.3 Percent	Systems Using 9.6 Percent	Systems Using Other
Aircraft				
Army	3	2	--	1
Navy	5	5	--	--
Air Force	9	--	8	1
Missiles				
Army	4	4	--	--
Navy	7	7	--	--
Air Force	6	--	6	--
Total Systems	34	18	14	2

SOURCE: Compiled by CBO from the December 1982 SARs.

$5.7 billion or 4.6 percent. Conversely if one adjusts the 15 Air Force estimates upward using the higher 14.3 percent, the added costs are $5.7 billion or 4.9 percent.

Non-Programmatic Adjustments to Cost Estimates

The SARs for 13 systems cited an estimating change that increased or decreased program costs in order to "offset the new economic indices." Altogether, at least $1.7 billion in net adjustments were made to four Navy and nine Air Force systems (see Table 15). These adjustments were made because total program costs resulting from the application of the latest economic indexes would otherwise not have equalled the corresponding costs in the President's budget. For example, the F-15 SAR estimate was decreased by $667.6 million to take account of lower inflation rates. This reduction was more than offset, however, by an increase of $781.1 million to reflect "offsets of actual impacts of inflation without a corresponding change in program content." The fact that the bulk of the adjustments were increases made by the Air Force suggests that the lower inflation rate it used in 1982 clashed with DoD budgetary ceilings.

TABLE 14. EXAMPLES OF SIMILAR WEAPONS SYSTEMS USING DIFFERENT PROCUREMENT INFLATION RATES FOR 1982

Weapons Systems	Navy Inflation Rate (percent)	Air Force Inflation Rate (percent)
Joint Programs		
HARM Missile	14.3	9.6
Sparrow Missile	14.3	9.6
Sidewinder Missile	14.3	9.6
Systems with Same 3 Prime Contractors		
Tomahawk Missile	14.3	
GLCM Missile	--	9.6
Systems with Same Prime Airframe Contractor		
F/A-18 Aircraft	14.3	--
AV-8B Aircraft	14.3	--
F-15 Aircraft	--	9.6

SOURCE: Compiled by CBO from the December 1982 SARs.

COSTS EXCLUDED FROM INDIVIDUAL SAR ESTIMATES

The SAR cost estimates for 13 systems exclude at least $40.8 billion in program costs that are footnoted in the SARs or reported in other defense budget documents, such as Congressional Data Sheets. Because these costs relate to the item being procured, they should be included in the SAR estimates. Inclusion of these costs would raise the December 1982 estimated costs for the 13 systems by 13.8 percent (see Table 16). Of the 13 systems, 3 were Air Force programs, 9 were Navy programs and 1 was an Army program. For the F-15 and F-16 programs, for example, the Air Force did not report almost $14 billion for procurement of additional aircraft. The Navy did not report over $4 billion of military construction costs for the Trident submarines. The Navy also did not include nearly $6 billion of CVN procurement costs for a carrier in 1988 and advance procurement in 1986-1988 for later ships.

TABLE 15. NET ADJUSTMENTS IN COST ESTIMATES TO OFFSET REVISIONS OF INFLATION INDEXES (In millions of dollars)

System	Amount Overstated or Understated (-)
Navy	
SSN-688 Submarine	a/
Captor Torpedo System	-17.8
Sidewinder Missile	-5.7
TACTAS Sonar	-15.8
Air Force	
F-15 Aircraft	781.1
F-16 Aircraft	662.4
E-3A Aircraft	10.6
B-1B Aircraft	-3.4
IR Maverick Missile	232.8
Defense Satellite Communications System	12.4
NAVSTAR Global Positioning System	1.6
ALCM Missile	b/
Sidewinder Missile	14.6
Total	1,672.8

SOURCE: Compiled by CBO from data in the December 1982 SARs.

a/ DoD reported a net estimating increase of $1.1 billion as a result of revised estimates and offsetting of the inflation indexes.

b/ DoD reported an increase of $23.8 million in 1977 base-year dollars with no increase in current dollars.

TABLE 16. PROGRAM COSTS EXCLUDED FROM THE DECEMBER 1982 SARS (In millions of dollars)

System	Primary Cost Category	Costs Excluded
Army		
M-1 Tank	Production base support, development of 120 mm gun and ammunition, and development of 105 mm gun and ammunition enhancements	1,615.3
Patriot Missile	Software and spares cost	167.5
Subtotal		1,782.8
Navy		
Captor Torpedo	MK-46 Torpedoes	991.1
Trident I Submarine	Military construction, Kings Bay, GA	2,015.4
Trident I Missile	Trident I backfit program for Poseidon submarines	3,717.3
Trident II Submarine	Backfit of Trident II missiles into Trident submarines, advance procurement in 1987 and 1988 for later ships, unspecified military construction	2,851.9
Trident II Missile	Unspecified military construction, and ballistic missile defense penetration systems	1,539.8
TACTAS Sonar	Retrofit and trainer installations	159.5
SSN-688 Submarine	Advance procurement in 1987 and 1988 for later ships	814.5
CG-47 Cruiser	Combat system engineering development program and AEGIS weapons systems development	926.2
CVN Carrier	1 carrier in 1988 and advance procurement in 1986-1988 for later ships	5,739.0
DDG-51 Destroyer	Advance procurement in 1988 for 1989 ships, and miscellaneous development costs	332.7
Subtotal		19,087.4
Air Force		
F-15 Aircraft	F-15 procurement option	7,733.6
F-16 Aircraft	F-16 procurement option	5,914.9
F-15/F-16 Derivative Aircraft	Total estimated cost for the derivative fighter budget program element reported by DoD in the RDT&E descriptive summary	5,600.0
B-1B Aircraft	Simulators, military construction, facility improvements/"Tech mod," and component improvement program	672.6
Subtotal		19,921.1
Total		40,791.3

SOURCE: Compiled by CBO from data provided by DoD.

INCONSISTENT DELIVERY DATA

In past SAR reviews, CBO has made extensive use of reported weapons delivery plans as an indication of contract schedule performance. As noted in Chapter II, these delivery plans are not always met.

Because DoD no longer requires program managers to report their planned deliveries for the four quarters after the current SAR, CBO has begun to make greater use of information on delivery plans in Congressional Data Sheets (CDS). 1/ Table 17 shows that the delivery plans contained in the September and December SARs for 15 systems are inconsistent. Moreover, actual equipment deliveries contained in the SARs do not always agree with those contained in the CDS, although both documents are supposed to reflect the President's Budget as of January 1983. Table 18 shows the differences for 13 systems.

LACK OF SARs FOR MANY MAJOR WEAPONS SYSTEMS

As noted in Chapter I, the Department of Defense Authorization Act of 1983 (Public Law 97-252) required that more systems be included in the SARs. The reporting requirement was effective on January 1, 1983, and included the December 1982 SARs. Table 19 shows that a SAR requirement now exists for 60 systems, in addition to the 62 reported in December 1982, for a total of 122 potential reports. Among the new programs are the MX missile ($22.7 billion), the P-3C aircraft ($9.2 billion), the KC-10A aircraft ($5.2 billion), and the AH-1S helicopter ($1.2 billion). The total cost of all the new systems is not known at this time. Table 20 lists 12 systems that, according to DoD, will be included in the SARs as soon as administratively possible. Table 21 lists 48 programs that were denied exemptions from SAR reporting by the Armed Services Committees.

1/ The Congressional Data Sheets are formal budget justification materials submitted each year by the Defense Department to the Congress.

TABLE 17. DIFFERENCES IN DELIVERY PLANS AS GIVEN IN THE SEPTEMBER AND DECEMBER SARS (In units to be delivered as of December 1982)

Weapons System	September 1982 SAR	December 1982 SAR	Difference
Army			
Patriot Missile	122	122	0
CH-47D Helicopter	5	5	0
UH-60 Helicopter	318	320	-2
Fighting Vehicle System (FVS)	305	290	15
25 mm Gun for FVS	502	530	-28
M-1 Tank	804	804	0
Copperhead Projectile	2,900	2,900	0
Multiple Launch Rocket System Rounds	1,512	1,572	-60
Navy			
F-14 Aircraft	435	435	0
F/A-18 Aircraft	44	44	0
Captor Torpedo System	1,051	1,051	0
HARM Missile	5	10	-5
Harpoon Missile	1,370	1,370	0
Phoenix Missile	60	36	24
Sidewinder Missile	85	37	48
Sparrow Missile	403	60	343
Tomahawk Missile	20	8	12
Trident I Submarine	2	2	0
Trident I Missile	334	334	0
SSN-688 Submarine	22	21	1
FFG-7 Frigate	24	24	0
Air Force			
F-15 Aircraft	660	662	-2
F-16 Aircraft	503	503	0
E-3A Aircraft	26	26	0
EF-111A Aircraft	9	9	0
NAVSTAR Global Positioning System	0	28	-28
ALCM Missile	329	329	0
GLCM Missile	5	4	1
IR Maverick Missile	0	200	-200
Sidewinder Missile	181	181	0
Sparrow Missile	530	330	200

SOURCE: Compiled by CBO from data provided by the Department of Defense.

TABLE 18. DIFFERENCES IN ACTUAL DELIVERIES AS GIVEN IN THE DECEMBER 1982 SARS AND THE FEBRUARY 1983 CONGRESSIONAL DATA SHEET (In units delivered as of December 1982)

Weapons System	December 1982 SARs	February 1983 Congressional Data Sheets	Difference
Army			
Patriot Missile	72	72	0
Stinger Missile	2,783	3,372	-589
UH-60 Helicopter	346	346	0
Fighting Vehicle System (FVS)	253	290	-37
25 mm Gun for FVS	495	670	-175
M-1 Tank	784	784	0
Multiple Launch Rocket System Rounds	710	1,710	-1,000
Navy			
F-14 Aircraft	434	434	0
F/A-18 Aircraft	43	44	-1
CH-53E Helicopter	41	41	0
Captor Torpedo System	1,014	1,014	0
HARM Missile	10	5	5
Harpoon Missile	1,381	1,356	25
Phoenix Missile	7	60	-53
Trident I Submarine	2	2	0
Trident I Missile	308	336	-28
SSN-688 Submarine	21	21	0
FFG-7 Frigate	24	24	0
Battleship Reactivation	1	0	1
Air Force			
F-15 Aircraft	664	664	0
F-16 Aircraft	521	530	-9
E-3A Aircraft	26	26	0
ALCM Missile	345	353	-8
GLCM Missile	3	3	0
Sidewinder Missile	18	0	18
Sparrow Missile	73	73	0

SOURCE: Compiled by CBO from data provided by the Department of Defense.

NOTE: The criteria for selecting systems to include in this table were: (1) a delivered quantity greater than zero; and (2) the existence of a Congressional data sheet that was comparable to the system included in the December 1982 SARs.

TABLE 19. POTENTIAL SAR SYSTEMS

	Systems
Systems in the December SARs	62
Systems to be reported as soon as administratively possible	12
Systems for which waivers were denied	48
Total potential SARs	122

SOURCE: Compiled by CBO from data provided by the DoD and the House and Senate Armed Services Committees.

NOTE: Although 122 systems now meet the SAR criteria, the actual number of SARs will continue to vary as DoD adds or eliminates programs.

TABLE 20. PROGRAMS MEETING THE STATUTORY REQUIREMENT FOR SAR REPORTING THAT HAVE NOT BEEN INCLUDED IN THE DECEMBER 1982 SARS BUT ARE TO COMMENCE REPORTING AS SOON AS POSSIBLE

System
Army
Army Data Distribution System (ADDS)
Remotely Piloted Vehicle (RPV)
Single Channel Ground and Airborne Radio System (SINGARS)
Navy
Advanced Lightweight Torpedo (ALWT)
ECX (TACAMO) Aircraft
Landing Craft Air Cushion (LCAC)
LHD-1 Class Ship (Amphibious Assault Ship)
LSD-41 Class Ship (Landing Ship Dock)
Air Force
C5-B Aircraft
HH-60D Helicopter
KC-10A Aircraft
Next Generation Trainer Aircraft

SOURCE: Compiled by CBO from data supplied by DoD.

TABLE 21. PROGRAMS DENIED EXEMPTIONS FROM SAR REPORTING BY THE SENATE AND HOUSE ARMED SERVICES COMMITTEES

System
Army
Attack Helicopter (AH-1S)
All Source Analysis System (ASAS)
Antitactical Missile (ATM)
Ballistic Missile Defense (BMD)
Chaparral Missile
Joint Tactical Missile System (JTACMS)
Division Support Weapon System (DSWS)
M88A1 Medium Recovery Vehicle
Lightweight Air Defense System (LADS)
Multiple Launch Rocket System/Terminal Guided Weapon (MLRS/TGW)
Short Range Air Defense Command and Control (SHORAD C^2)
TOW 2 Missile
Utility Helicopter (UH-1)
105 mm Gun FT. Tank Modification (M60-series)
155 mm Self Propelled Howitzer
Navy
Anti-Submarine Warfare Standoff Weapon (ASW/SOW)
Airborne Self Protection Jammer (ASPJ)
Integrated Tactical Surveillance System (ITSS)
Joint Services Advanced Vertical Lift Program (JVX)
Rapid Location/Wide-Aperture Array Sonar (RAPLOC/WAA)
CV Variant Helicopter (SH-60F)
Submarine Advanced Combat System (SUBACS)
Advanced Flight Training System (VTXTS)
A6-E Aircraft
EA-6B Aircraft
P-3C Aircraft
E-2C Aircraft
Close-In Weapon System MK-15 (CIWS)
Standard Missiles

(Continued)

TABLE 21. (Continued)

System
Air Force
Advanced Communications System (SEEK TALK)
Advanced Tactical Fighter
C-17 Aircraft
Combat Identification System (CIS)
CONUS OTH-B (Over-the-horizon Radar)
Defense Meteorological Satellite Program (DMSP)
Defense Support Program (DSP)
Laser Bomb Guidance Kit
Microwave Landing System
MILSTAR Space Communications
Pave Mover
Peacekeeper (M-X) Missile
Precision Location Strike Systems (PLSS)
Space Defense Systems and Operations
Space Surveillance Program
Tri-Service Joint Tactical Communication Program (TRI-TAC)
Tanker, Transport, Bomber (TTB) Trainer
Wide Area Anti-Armor Munition WAAM (WASP)
WWMCSS Information System

SOURCE: Compiled by CBO from data supplied by DoD.

APPENDIXES

APPENDIX A. CBO ADJUSTMENTS TO DECEMBER 1982 SAR DATA FOR COST GROWTH ANALYSIS

Several adjustments were necessary to maintain consistency between the December 1981 and December 1982 SARs. These reverse certain DoD cost changes in the December 1982 SARs that could distort cost growth measurement. Ideally, similar adjustments should have been made for previous SARs but because the data were not readily available CBO adjusted only the 1982 costs. For the same reason, CBO did not adjust the 1982 costs for the stealth ALCM missile or the F-15/F-16 procurement options that were discussed in Chapter I. Tables A-1 and A-2 identify the adjustments that were made to the current-year and base-year figures reported in the December SARs.

TABLE A-1. CBO ADJUSTMENTS TO DECEMBER 1982 SAR COSTS (In millions of current dollars)

System	Quantity Change	Economic Change	Total Adjustment	Reason for Adjustment
AH-64 Helicopter			-8.7	Military construction costs added in 1982 but not included in 1981
Pershing II Missile			-4.7	Military construction costs added in 1982 but not included in 1981
Patriot Missile			77.4	Software costs removed from SAR and added to operating (O&M) appropriation
			90.1	1987 spares costs removed from SAR and reclassified as replenishment spares
			-254.7	Military construction costs added in 1982 but not included in 1981
Hellfire Missile			-7.2	Military construction costs added in 1982 but not included in 1981
Fighting Vehicle	173.6	11.7	679.3	Ammunition costs deleted from SAR
			-89.9	Military construction costs added in 1982 but not included in 1981
M-1 Tank			-23.7	Military construction costs added in 1982 but not included in 1981
DIVAD Gun			-84.3	Military construction costs added in 1982 but not included in 1981
Multiple Launch Rocket System			-69.8	Military construction costs added in 1982 but not included in 1981
Trident Submarines	10,739.9		14,085.2	Seven submarines deleted and reclassified as Trident II submarines
F-15/F-16 Derivative Fighter Costs			5,600	Derivative fighter costs deleted from SAR
Total	10,913.5	11.7	19,989.0	

SOURCE: Compiled by CBO from data provided by DoD.

TABLE A-2. CBO ADJUSTMENTS TO DECEMBER 1982 SAR COSTS (In millions of base-year dollars)

System	Quantity Change	Total Adjustment	Reason for Adjustment
AH-64 Helicopter		-3.5	Military construction costs added in 1982 but not included in 1981
Pershing II Missile		-3.4	Military construction costs added in 1982 but not included in 1981
Patriot Missile		-21.6	Software costs removed from SAR and added to operating (O&M) appropriation
		-38.1	1987 spares costs removed from SAR and reclassified as replenishment spares
		-87.2	Military construction costs added in 1982 but not included in 1981
Hellfire Missile		-3.4	Military construction costs added in 1982 but not included in 1981
Fighting Vehicle	20.8	200.0 a/	Ammunition costs deleted from SAR
		-31.9	Military construction costs added in 1982 but not included in 1981
M-1 Tank		-8.5	Military construction costs added in 1982 but not included in 1981
DIVAD Gun		-46.0	Military construction costs added in 1982 but not included in 1981
Multiple Launch Rocket System		-39.4	Military construction costs added in 1982 but not included in 1981
Trident Submarines	3,314.7	4,900.0 a/	Seven submarines deleted and reclassified as Trident II submarines
F-15/F-16 Derivative Fighter Costs		1,800.0 a/	Derivative fighter costs deleted from SAR
Total	3,335.5	6.617.0	

SOURCE: Compiled by CBO from data provided by DoD.

a/ Estimated by CBO.

APPENDIX B SUMMARY TABLES OF DECEMBER 1982 SAR PROGRAM CHANGES

This appendix contains three tables summarizing some of the major tables appearing in the text. Table B-1 covers Army programs, Table B-2 Navy programs, and Table B-3 Air Force programs.

TABLE B-1. DECEMBER 1982 SAR REVIEW SUMMARY, ARMY (In millions of dollars)

System	TABLE 8 Nunn-McCurdy Amendment Unit-Cost Increases (percent) 1983 Procurement	Total Program	TABLE 9 Cost of Schedule Changes Costs	Savings (-)	TABLE 10 Schedule Performance Major Milestones Ahead	Behind	Delivery Status
Patriot Missile	25.8 a/	--	390.8	--	--	--	Behind
Pershing II Missile	--	--	--	--	--	1	Behind
Hellfire Missile	--	--	4.7	--	--	--	--
Stinger Missile	--	--	--	--	--	--	Behind
CH-47D Helicopter	--	--	--	--	--	--	Ahead
UH-60 Helicopter	--	--	--	--	--	--	Ahead
AH-64 Helicopter	--	--	44.3	--	--	--	--
AHIP Helicopter	--	--	--	--	1	--	--
Fighting Vehicle System (FVS)	--	--	--	--	--	--	Behind
25mm Gun for FVS	--	--	--	--	--	--	--
Light Armored Vehicle	--	--	--	--	--	--	--
M-1 Tank	--	--	646.2	--	--	--	Behind
Copperhead Projectile	133.7	117	--	--	--	--	--
DIVAD Gun	--	--	--	--	--	--	--
Multple Launch Rocket System	--	--	--	--	1	1	Behind
Joint Tactical Information Distribution System	--	--	--	--	--	--	--
AN/TTC-39 Switching System	--	--	45.7	--	--	--	--

a/ Technical breach (see Chapter II).

TABLE B-1. ARMY (Continued)

TABLE 11 Contract Overruns	TABLE 12 Contract Underruns	TABLE 15 Offsets to Revised Inflation Indexes	TABLE 16 Costs Excluded From SARs	TABLE 17 Differences in Actual Deliveries Between SARs and 1982 Congressional Data Sheets (Units)	System
b/	b/	--	167.5	0	Patriot Missile
b/	--	--	--	--	Pershing II Missile
b/	--	--	--	--	Hellfire Missile
b/	b/	--	--	-589	Stinger Missile
b/	b/	--	--	--	CH-47D Helicopter
6	--	--	--	0	UH-60 Helicopter
--	--	--	--	--	AH-64 Helicopter
b/	--	--	--	--	AHIP Helicopter
b/	--	--	--	-37	Fighting Vehicle System (FVS)
--	--	--	--	-175	25 mm Gun for FVS
--	--	--	--	--	Light Armored Vehicle
b/	--	--	1,615.3	0	M-1 Tank
--	--	--	--	--	Copperhead Projectile
b/	--	--	--	--	DIVAD Gun
b/	--	--	--	-1,000 c/	Multiple Launch Rocket System
--	--	--	--	--	Joint Tactical Information Distribution System
--	--	--	--	--	AN/TTC-39 Switching Station

b/ According to DoD, disclosure of overrun/underrun could jeopardize negotiations.

c/ Based on rocket rounds.

TABLE B-2. DECEMBER 1982 SAR REVIEW SUMMARY, NAVY (In millions of dollars)

System	TABLE 8 Nunn-McCurdy Amendment Unit-Cost Increases (percent) 1983 Procurement	Total Program	TABLE 9 Cost of Schedule Changes Costs	Savings (-)	TABLE 10 Schedule Performance Major Milestones Ahead	Behind	Delivery Status
F-14 Aircraft	--	--	492.3	--	--	2	Behind
F/A-18 Aircraft	--	--	975.1	--	--	3	Behind
AV-8B Aircraft	--	--	--	-168.2	1	2	--
LAMPS MK III-Helicopter (SH-60B)	17.5	28.8	1,238.4	--	--	--	--
LAMPS MK III-Ships	--	--	--	-8.2	--	--	--
CH-53E Helicopter	--	--	--	-56.3	--	1	Ahead
CAPTOR Torpedo System	--	--	--	-14.3	--	--	Behind
AMRAAM Missile	--	--	--	--	--	--	--
HARM Missile	--	19.9	146	--	--	2	--
Harpoon Missile	--	--	--	--	--	--	Ahead
Phoenix Missile	--	--	64.6	--	--	2	Behind
Sidewinder Missile	--	--	22.6	--	--	--	--
Sparrow Missile	--	--	27.1	--	1	1	Behind
Tomahawk Missile	75.3	--	258.9	--	--	b/	Behind
Trident I Missile	--	--	--	--	--	--	Behind
Trident I Submarine	25.7 a/	15.4 a/	--	--	4	--	--
Trident II Missile	--	--	--	--	--	--	--
Trident II Submarine	--	--	--	--	--	--	--
TACTAS Sonar	--	--	4.1	--	--	--	--
SSN-688 Submarine	--	--	--	--	--	--	--
CG-47 Cruiser	--	--	182.2	--	1	--	Ahead
FFG-7 Frigate	--	--	--	--	--	--	--
CVN Carrier	--	--	--	--	4	--	--
Battleship Reactivation	--	--	--	--	--	--	--
DDG-51 Destroyer	--	--	--	--	--	--	--
Joint Tactical Information Distribution System	--	--	--	--	--	--	--
Light Armored Vehicle	--	--	--	--	--	--	--

a/ Technical breach (see Chapter II).

b/ A program restructure has caused a delay in most of the major milestones.

TABLE B-2. NAVY (Continued)

TABLE 11 Contract Overruns	TABLE 12 Contract Underruns	TABLE 15 Offsets to Revised Inflation Indexes	TABLE 16 Costs Excluded From SARs	TABLE 17 Differences in Delivery Schedules Between SARs and 1982 Congressional Data Sheets (Units)	System
--	--	--	--	0	F-14 Aircraft
643	11	--	--	-1	F/A-18 Aircraft
11	--	--	--	--	AV-8B Aircraft
--	--	--	--	--	LAMPS MK III-Helicopter (SH-60B)
--	--	--	--	--	LAMPS MK III-Ships
39	14	--	--	0	CH-53E Helicopter
--	--	-17.8	991.1	0	CAPTOR Torpedo System
--	--	--	--	--	AMRAAM Missile
14	--	--	--	5	HARM Missile
--	--	--	--	25	Harpoon Missile
--	--	--	--	-53	Phoenix Missile
10	--	-5.7	--	--	Sidewinder Missile
6	26	--	--	--	Sparrow Missile
87	7	--	--	--	Tomahawk Missile
--	--	--	3,717.3	-28	Trident I Missile
c/	--	--	2,015.4	0	Trident I Submarine
--	--	--	1,539.8	--	Trident II Missile
--	--	--	2,851.9	--	Trident II Submarine
7	--	-15.8	159.5	--	TACTAS Sonar
1,630	--	d/	814.5	0	SSN-688 Submarine
45	--	--	926.2	--	CG-47 Cruiser
c/	c/	--	--	0	FFG-7 Frigate
--	--	--	5,739	--	CVN Carrier
156	--	--	--	1	Battleship Reactivation
--	--	--	332.7	--	DDG-51 Destroyer
--	--	--	--	--	Joint Tactical Information Distribution System
--	--	--	--	--	Light Armored Vehicle

c/ According to DoD, disclosure of overrun/underrun could jeopardize negotiations.

d/ Exact amount was not given.

TABLE B-3. DECEMBER 1982 SAR REVIEW SUMMARY, AIR FORCE (In millions of dollars)

System	TABLE 8 Nunn-McCurdy Amendment Unit-Cost Increases (percent) 1983 Procurement	Total Program	TABLE 9 Cost of Schedule Changes Costs	Savings (-)	TABLE 10 Schedule Performance Major Milestones Ahead	Behind	Delivery Status
F-15 Aircraft	--	--	--	--	--	--	Ahead
F-16 Aircraft	--	--	--	-329.7	--	--	Ahead
E-3A Aircraft	--	--	134.6	--	--	--	--
EF-111A Aircraft	--	--	--	--	--	2	--
KC-135 Reengining Modification	--	--	--	--	--	--	--
B-1B Aircraft	--	--	--	--	3	--	--
B-52 OAS/CMI Modifications	--	--	--	--	--	--	--
HARM Missile	--	31.5	926.3	--	--	--	--
IR Maverick Missile	100.5	22	--	-219.5	--	1	Behind
AMRAAM Missile	--	--	--	--	--	--	--
Sidewinder Missile	--	--	--	-6.6	--	--	Behind
Sparrow Missile	--	27.6	--	-37.6	--	--	Behind
Defense Satellite Communications System	--	--	--	--	--	1	Behind
NAVSTAR Global Positioning System	--	--	1.8	--	--	1	Behind
Inertial Upper Stage (IUS) Rocket	--	--	--	--	--	--	--
ALCM Missile	--	51.5	--	--	--	--	Ahead
GLCM Missile	25.6 a/	--	3.8	--	--	--	Behind
Joint Tactical Information Distribution System	--	--	5.8	--	--	--	--
LANTIRN Navigation/ Targeting System	--	--	--	--	--	--	--

a/ Based on the estimate in the Congressional Data Sheets.

TABLE B-3. AIR FORCE (Continued)

TABLE 11 Contract Overruns	TABLE 12 Contract Underruns	TABLE 15 Offsets to Revised Inflation Indexes	TABLE 16 Costs Excluded From SARs	TABLE 17 Differences in Delivery Schedules Between SARs and 1982 Congressional Data Sheets (Units)	System
137	--	781.1	7,733.6 c/	0	F-15 Aircraft
173	--	662.4	5,914.9 c/	-9	F-16 Aircraft
--	6	10.6	--	0	E-3A Aircraft
4	--	--	--	--	EF-111A Aircraft
--	--	--	--	--	KC-135 Reengining Modification
--	--	-3.4	672.6	--	B-1B Aircraft
23	--	--	--	--	B-52 OAS/CMI Modifications
--	--	--	--	--	HARM Missile
58	--	232.8	--	--	IR Maverick Missile
22	--	--	--	--	AMRAAM Missile
--	--	14.6	--	18	Sidewinder Missile
--	--	--	--	0	Sparrow Missile
22	--	12.4	--	--	Defense Satellite Communications System
22	--	1.6	--	--	NAVSTAR Global Positioning System
136	--	--	--	--	Inertial Upper Stage (IUS) Rocket
20	13	b/	--	-8	ALCM Missile
64	8	--	--	0	GLCM Missile
--	--	--	--	--	Joint Tactical Information Distribution System
--	--	--	--	--	LANTIRN Navigation/ Targeting System

b/ DoD reported an increase in base year dollars with no change in current dollars.

c/ An additional $5,600 which has been budgeted for an F-15/F-16 derivative aircraft is not shown.